

10/578013

SEQUENCE LISTING

AP20 Rec'd EGYPTO 03 MAY 2006

<110> Garry, Jr., Robert F.  
Wilson, Russell B.

<120> METHOD OF PREVENTING VIRUS:CELL FUSION BY INHIBITING THE FUNCTION  
OF THE FUSION INITIATION REGION IN RNA VIRUSES HAVING CLASS I  
MEMBRANE FUSOGENIC ENVELOPE PROTEINS

<130> 12920.0013.00PC00

<150> US 60/517,181

<151> 2003-11-04

<160> 31

<170> PatentIn version 3.3

<210> 1

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 1

Leu Ile Met Lys Asn His Leu Arg Asp Ile Met Gly Ile Pro Tyr Cys  
1 5 10 15

Asn Tyr Ser Arg Tyr Trp Tyr Leu Asn His Thr Ser Thr Gly Lys Thr  
20 25 30

Leu Pro Arg Cys Trp Leu Ile  
35

<210> 2

<211> 100

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 2

Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr  
1 5 10 15

Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys  
20 25 30

Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly  
35 40 45

Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe  
50 55 60

Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg  
65 70 75 80

Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg  
85 90 95

Asn Phe Phe Ser  
100

<210> 3  
<211> 32  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic peptide

<400> 3

Leu Arg Thr Phe Ser Ile Leu Asn Arg Lys Ala Ile Asp Phe Leu Leu  
1 5 10 15

Gln Arg Trp Gly Gly Thr Cys His Ile Leu Gly Pro Asp Cys Cys Ile  
20 25 30

<210> 4  
<211> 43  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic peptide

<400> 4

Ile Gln Asp Leu Glu Lys Tyr Val Glu Asp Thr Lys Ile Asp Leu Trp  
1 5 10 15

Ser Tyr Asn Ala Glu Leu Leu Val Ala Leu Glu Asn Gln His Thr Ile  
20 25 30

Asp Leu Thr Asp Ser Glu Met Asn Lys Leu Phe  
35 40

<210> 5  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic peptide

<400> 5

Leu Gly Leu Lys Leu Leu Arg Tyr Tyr Thr Glu Ile Leu Ser Leu Phe  
1 5 10 15

Gly

<210> 6  
<211> 94  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 6

Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala Thr Gln Gly Tyr Leu Ile  
1 5 10 15

Ser Asn Phe Asp Glu Ser Ser Cys Thr Phe Met Pro Glu Gly Thr Val  
20 25 30

Cys Ser Gln Asn Ala Leu Tyr Pro Met Ser Pro Leu Leu Gln Glu Cys  
35 40 45

Leu Arg Gly Ser Thr Lys Ser Cys Ala Arg Thr Leu Val Ser Gly Ser  
50 55 60

Phe Gly Asn Arg Phe Ile Leu Ser Gln Gly Asn Leu Ile Ala Asn Cys  
65 70 75 80

Ala Ser Ile Leu Cys Lys Cys Tyr Thr Thr Gly Thr Ile Ile  
85 90

<210> 7

<211> 57

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 7

Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln  
1 5 10 15

Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala  
20 25 30

Val Pro Trp Asn Ala Ser Trp Ser Asn Lys Ser Leu Glu Gln Ile Trp  
35 40 45

Asn His Thr Thr Trp Met Glu Trp Asp  
50 55

<210> 8

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 8

Ile Leu Asn Arg Lys Ala Ile Asp Phe  
1 5

<210> 9

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 9

Cys His Ile Leu Gly Pro Asp Cys  
1 5

<210> 10

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 10

Phe Leu Leu Gln Arg Trp Gly Gly Thr Cys His Ile Leu Gly Pro Asp  
1 5 10 15

Cys Cys Ile

<210> 11

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 11

Leu Lys Leu Leu Arg Tyr Tyr Thr Glu  
1 5

<210> 12

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 12

Cys Thr Phe Met Pro Glu Gly Thr Val Cys  
1 5 10

<210> 13

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 13

Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala Thr Gln Gly Tyr Leu Ile  
1 5 10 15

Ser Asn Phe

<210> 14  
 <211> 9  
 <212> PRT  
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<220>  
 <223> Synthetic peptide

<400> 14

Cys Leu Arg Gly Ser Thr Lys Ser Cys  
 1 5

<210> 15  
 <211> 36  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic peptide

<400> 15

Thr Leu Val Ser Gly Ser Phe Gly Asn Arg Phe Ile Leu Ser Gln Gly  
 1 5 10 15

Asn Leu Ile Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Thr Thr  
 20 25 30

Gly Thr Ile Ile  
 35

<210> 16  
 <211> 234  
 <212> PRT  
 <213> LASSA VIRUS

<400> 16

Leu Leu Gly Thr Phe Thr Trp Thr Leu Ser Asp Ser Glu Gly Asn Glu  
 1 5 10 15

Thr Pro Gly Gly Tyr Cys Leu Thr Arg Trp Met Leu Ile Glu Ala Glu  
 20 25 30

Leu Lys Cys Phe Gly Asn Thr Ala Val Ala Lys Cys Asn Glu Lys His  
 35 40 45

Asp Glu Glu Phe Cys Asp Met Leu Arg Leu Phe Asp Phe Asn Lys Gln  
 50 55 60

Ala Ile Arg Arg Leu Lys Thr Glu Ala Gln Met Ser Ile Gln Leu Ile  
 65 70 75 80

Asn Lys Ala Val Asn Ala Leu Ile Asn Asp Gln Leu Ile Met Lys Asn  
 85 90 95

His Leu Arg Asp Ile Met Gly Ile Pro Tyr Cys Asn Tyr Ser Arg Tyr  
 100 105 110

Trp Tyr Leu Asn His Thr Ser Thr Gly Lys Thr Ser Leu Pro Arg Cys

115	120	125
Trp Leu Ile Ser Asn Gly Ser Tyr Leu Asn Glu Thr Lys Phe Ser Asp		
130	135	140
Asp Ile Glu Gln Gln Ala Asp Asn Met Ile Thr Glu Met Leu Gln Lys		
145	150	155
Glu Tyr Ile Asp Arg Gln Gly Lys Thr Pro Leu Gly Leu Val Asp Leu		
	165	170
		175
Phe Val Phe Ser Thr Ser Phe Tyr Leu Ile Ser Ile Phe Leu His Leu		
	180	185
		190
Val Lys Ile Pro Thr His Arg His Ile Val Gly Lys Pro Cys Pro Lys		
	195	200
		205
Pro His Arg Leu Asn His Met Gly Ile Cys Ser Cys Gly Leu Tyr Lys		
	210	215
		220
Gln Pro Gly Val Pro Val Arg Trp Lys Arg		
225	230	

<210> 17  
 <211> 388  
 <212> PRT  
 <213> SARS VIRUS

<400> 17

Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe Ala Met Gln
1 5 10 15
Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val Leu Tyr
20 25 30
Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln
35 40 45
Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln
50 55 60
Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln
65 70 75 80
Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp Ile Leu
85 90 95
Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg Leu Ile
100 105 110
Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln Gln Leu Ile
115 120 125
Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr Lys Met
130 135 140
Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys Gly Lys
145 150 155 160
Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly Val Val
165 170 175

Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe Thr Thr  
 180 185 190  
 Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg Glu Gly  
 195 200 205  
 Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg Asn Phe  
 210 215 220  
 Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr Phe Val Ser Gly Asn  
 225 230 235 240  
 Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu  
 245 250 255  
 Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys  
 260 265 270  
 Asn His Thr Ser Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn  
 275 280 285  
 Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val  
 290 295 300  
 Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys  
 305 310 315 320  
 Tyr Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly Phe Ile  
 325 330 335  
 Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu Cys Cys Met  
 340 345 350  
 Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys Gly Ser Cys  
 355 360 365  
 Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys Gly Val Lys  
 370 375 380  
 Leu His Tyr Thr  
 385

<210> 18  
 <211> 175  
 <212> PRT  
 <213> EBOLA VIRUS

<400> 18

Glu Ala Ile Val Asn Ala Gln Pro Lys Cys Asn Pro Asn Leu His Tyr  
 1 5 10 15  
 Trp Thr Thr Gln Asp Glu Gly Ala Ala Ile Gly Leu Ala Trp Ile Pro  
 20 25 30  
 Tyr Phe Gly Pro Ala Ala Glu Gly Ile Tyr Thr Glu Gly Leu Met His  
 35 40 45  
 Asn Gln Asp Gly Leu Ile Cys Gly Leu Arg Gln Leu Ala Asn Glu Thr  
 50 55 60  
 Thr Gln Ala Leu Gln Leu Phe Leu Arg Ala Thr Thr Glu Leu Arg Thr  
 65 70 75 80

Phe Ser Ile Leu Asn Arg Lys Ala Ile Asp Phe Leu Leu Gln Arg Trp  
                             85                            90                            95  
 Gly Gly Thr Cys His Ile Leu Gly Pro Asp Cys Cys Ile Glu Pro His  
                             100                            105                            110  
 Asp Trp Thr Lys Asn Ile Thr Asp Lys Ile Asp Gln Ile Ile His Asp  
                             115                            120                            125  
 Phe Val Asp Lys Thr Leu Pro Asp Gln Gly Asp Asn Asp Asn Trp Trp  
                             130                            135                            140  
 Thr Gly Trp Arg Gln Trp Ile Pro Ala Gly Ile Gly Val Thr Gly Val  
                             145                            150                            155                            160  
 Ile Ile Ala Val Ile Ala Leu Phe Cys Ile Cys Lys Phe Val Phe  
                             165                            170                            175

<210> 19  
 <211> 191  
 <212> PRT  
 <213> INFLUENZA VIRUS

<400> 19

Gly Leu Phe Gly Ala Ile Ala Gly Phe Ile Glu Asn Gly Trp Glu Gly  
 1                            5                            10                            15  
 Met Ile Asp Gly Trp Tyr Gly Phe Arg His Gln Asn Ser Glu Gly Thr  
                             20                            25                            30  
 Gly Gln Ala Ala Asp Leu Lys Ser Thr Gln Ala Ala Ile Asp Gln Ile  
                             35                            40                            45  
 Asn Gly Lys Leu Asn Arg Val Ile Glu Lys Thr Asn Glu Lys Phe His  
                             50                            55                            60  
 Gln Ile Glu Lys Glu Phe Ser Glu Val Glu Gly Arg Ile Gln Asp Leu  
                             65                            70                            75                            80  
 Glu Lys Tyr Val Glu Asp Thr Lys Ile Asp Leu Trp Ser Tyr Asn Ala  
                             85                            90                            95  
 Glu Leu Leu Val Ala Leu Glu Asn Gln His Thr Ile Asp Leu Thr Asp  
                             100                            105                            110  
 Ser Glu Met Asn Lys Leu Phe Glu Lys Thr Arg Arg Gln Leu Arg Glu  
                             115                            120                            125  
 Asn Ala Glu Glu Met Gly Asn Gly Cys Phe Lys Ile Tyr His Lys Cys  
                             130                            135                            140  
 Asp Asn Ala Cys Ile Glu Ser Ile Arg Asn Gly Thr Tyr Asp His Asp  
                             145                            150                            155                            160  
 Val Tyr Arg Asp Glu Ala Leu Asn Asn Arg Phe Gln Ile Lys Gly Val  
                             165                            170                            175  
 Glu Leu Lys Ser Gly Tyr Lys Asp Trp Arg Cys Asn Ile Cys Ile  
                             180                            185                            190

<210> 20



<211> 438  
 <212> PRT  
 <213> MEASLES VIRUS

<400> 20

Phe	Ala	Gly	Val	Val	Leu	Ala	Gly	Ala	Ala	Leu	Gly	Val	Ala	Thr	Ala		
1				5					10					15			
Ala	Gln	Ile	Thr	Ala	Gly	Ile	Ala	Leu	His	Gln	Ser	Met	Leu	Asn	Ser		
			20					25					30				
Gln	Ala	Ile	Asp	Asn	Leu	Arg	Ala	Ser	Leu	Glu	Thr	Thr	Asn	Gln	Ala		
		35					40					45					
Ile	Glu	Ala	Ile	Arg	Gln	Ala	Gly	Gln	Glu	Met	Ile	Leu	Ala	Val	Gln		
	50					55					60						
Gly	Val	Gln	Asp	Tyr	Ile	Asn	Asn	Glu	Leu	Ile	Pro	Ser	Met	Asn	Gln		
65					70					75					80		
Leu	Ser	Cys	Asp	Leu	Ile	Gly	Gln	Lys	Leu	Gly	Leu	Lys	Leu	Leu	Arg		
			85						90					95			
Tyr	Tyr	Thr	Glu	Ile	Leu	Ser	Leu	Phe	Gly	Pro	Ser	Leu	Arg	Asp	Pro		
			100					105					110				
Ile	Ser	Ala	Glu	Ile	Ser	Ile	Gln	Ala	Leu	Ser	Tyr	Ala	Leu	Gly	Gly		
		115					120					125					
Asp	Ile	Asn	Lys	Val	Leu	Glu	Lys	Leu	Gly	Tyr	Ser	Gly	Gly	Asp	Leu		
	130					135					140						
Leu	Gly	Ile	Leu	Glu	Ser	Arg	Gly	Ile	Lys	Ala	Arg	Ile	Thr	His	Val		
145					150					155					160		
Asp	Thr	Glu	Ser	Tyr	Phe	Ile	Val	Leu	Ser	Ile	Ala	Tyr	Pro	Thr	Leu		
				165					170					175			
Ser	Glu	Ile	Lys	Gly	Val	Ile	Val	His	Arg	Leu	Glu	Gly	Val	Ser	Tyr		
			180					185					190				
Asn	Ile	Gly	Ser	Gln	Glu	Trp	Tyr	Thr	Thr	Val	Pro	Lys	Tyr	Val	Ala		
		195					200					205					
Thr	Gln	Gly	Tyr	Leu	Ile	Ser	Asn	Phe	Asp	Glu	Ser	Ser	Cys	Thr	Phe		
	210					215						220					
Met	Pro	Glu	Gly	Thr	Val	Cys	Ser	Gln	Asn	Ala	Leu	Tyr	Pro	Met	Ser		
225					230					235					240		
Pro	Leu	Leu	Gln	Glu	Cys	Leu	Arg	Gly	Ser	Thr	Lys	Ser	Cys	Ala	Arg		
				245					250					255			
Thr	Leu	Val	Ser	Gly	Ser	Phe	Gly	Asn	Arg	Phe	Ile	Leu	Ser	Gln	Gly		
			260					265						270			
Asn	Leu	Ile	Ala	Asn	Cys	Ala	Ser	Ile	Leu	Cys	Lys	Cys	Tyr	Thr	Thr		
		275					280					285					
Gly	Thr	Ile	Ile	Asn	Gln	Asp	Pro	Asp	Lys	Ile	Leu	Thr	Tyr	Ile	Ala		
	290					295					300						

Ala Asp His Cys Pro Val Val Glu Val Asn Gly Val Thr Ile Gln Val  
 305 310 315 320  
 Gly Ser Arg Arg Tyr Pro Asp Ala Val Tyr Leu His Arg Ile Asp Leu  
 325 330 335  
 Gly Pro Pro Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly  
 340 345 350  
 Asn Ala Ile Ala Lys Leu Glu Asp Ala Lys Glu Leu Leu Glu Ser Ser  
 355 360 365  
 Asp Gln Ile Leu Arg Ser Met Lys Gly Leu Ser Ser Thr Ser Ile Val  
 370 375 380  
 Tyr Ile Leu Ile Ala Val Cys Leu Gly Gly Leu Ile Gly Ile Pro Ala  
 385 390 395 400  
 Leu Ile Cys Cys Cys Arg Gly Arg Cys Asn Lys Lys Gly Glu Gln Val  
 405 410 415  
 Gly Met Ser Arg Pro Gly Leu Lys Pro Asp Leu Thr Gly Thr Ser Lys  
 420 425 430  
 Ser Tyr Val Arg Ser Leu  
 435  
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 <212> PRT  
 <213> HIV  
 <400> 21  
 Ala Val Gly Ile Gly Ala Leu Phe Leu Gly Phe Leu Gly Ala Ala Gly  
 1 5 10 15  
 Ser Thr Met Gly Ala Ala Ser Met Thr Leu Thr Val Gln Ala Arg Gln  
 20 25 30  
 Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile  
 35 40 45  
 Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln  
 50 55 60  
 Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln  
 65 70 75 80  
 Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala  
 85 90 95  
 Val Pro Trp Asn Ala Ser Trp Ser Asn Lys Ser Leu Glu Gln Ile Trp  
 100 105 110  
 Asn His Thr Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr  
 115 120 125  
 Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys  
 130 135 140  
 Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn  
 145 150 155 160

Trp Phe Asn Ile Thr Asn Trp Leu Trp Tyr Ile Lys Leu Phe Ile Met  
165 170 175

Ile Val Gly Gly Leu Val Gly Leu Arg Ile Val Phe Ala Val Leu Ser  
180 185 190

Ile Val Asn Arg Val Arg Gln  
195

<210> 22  
<211> 22  
<212> PRT  
<213> Artificial sequence

<220>  
<223> Synthetic peptide

<400> 22

Gly Asn His Ile Leu Ser Leu Val Gln Asn Ala Pro Tyr Gly Leu Tyr  
1 5 10 15

Phe Ile His Phe Ser Trp  
20

<210> 23  
<211> 19  
<212> PRT  
<213> Artificial sequence

<220>  
<223> Synthetic peptide

<400> 23

Gly Tyr Phe Val Gln Asp Asp Gly Glu Trp Lys Phe Thr Gly Ser Ser  
1 5 10 15

Tyr Tyr Tyr

<210> 24  
<211> 22  
<212> PRT  
<213> Artificial sequence

<220>  
<223> Synthetic peptide

<400> 24

Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly Val Val  
1 5 10 15

Phe Leu His Val Thr Tyr  
20

<210> 25  
<211> 19  
<212> PRT  
<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 25

Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg Asn  
1 5 10 15

Phe Phe Ser

<210> 26

<211> 19

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 26

Met Phe Pro Pro Trp Ser Ala Ala Ala Gly Val Pro Phe Ser Leu Ser  
1 5 10 15

Val Gln Tyr

<210> 27

<211> 26

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 27

Gln Asp Ala Ile Lys Lys Leu Asn Glu Ser Tyr Ile Asn Leu Lys Glu  
1 5 10 15

Val Gly Thr Tyr Glu Met Tyr Val Lys Trp  
20 25

<210> 28

<211> 19

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 28

Met Tyr Lys Thr Pro Thr Leu Lys Tyr Phe Gly Gly Phe Asn Phe Ser  
1 5 10 15

Gln Ile Leu

<210> 29

<211> 28

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 29

Ala Ala Cys Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu  
1 5 10 15

Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp  
20 25

<210> 30

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 30

Asn Tyr Ser Lys Tyr Trp Tyr Leu Asn His Thr Thr Thr Gly Arg  
1 5 10 15

<210> 31

<211> 19

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 31

Gly Thr Phe Thr Trp Thr Leu Ser Asp Ser Glu Gly Lys Asp Thr Pro  
1 5 10 15

Gly Gly Tyr